United States Environmental Protection Agency
Region 1 – EPA New England
5 Post Office Square – Suite 100
Boston, MA 02109-3912

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

APR 17 2015

George Samia
Town Administrator
175 Central Street
East Bridgewater, MA 02333-0386

Re: Request for Information Pursuant to Section 308 of the Clean Water Act; EPA Docket No. CWA-01-308-15-19

Dear Mr. Samia:

The Town of East Bridgewater (the "Town") owns and operates a Municipal Separate Storm Sewer System ("MS4") – a system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, and storm drains) designed to collect, convey, and directly discharge storm water to receiving waters.

Section 301(a) of the Clean Water Act (the "Act"), 33 U.S.C. § 1311(a), prohibits the discharge of pollutants into navigable waters of the United States except in compliance with, among other things, the terms and conditions of a National Pollutant Discharge Elimination System ("NPDES") permit issued pursuant to Section 402 of the CWA, 33 U.S.C. § 1342.

Discharges of stormwater from the Town's MS4 are authorized by the NPDES General Permit for Storm Water Discharges from Small MS4s ("Permit") issued by the United States Environmental Protection Agency ("EPA") on May 1, 2003. The Town submitted a Notice of Intent for authorization on July 24, 2003, and was issued tracking number MAR041109.

Part II.A.1 of the Permit requires the Town to develop a storm water management program implementing the Minimum Control Measures described in Part II.B of the Permit. Part II.A.2 of the Permit requires that all elements of the stormwater management program be implemented by May 1, 2008.

Section 308(a) of the Act, 33 U.S.C. § 1318(a), authorizes EPA to require the owner or operator of a point source to provide information needed to determine whether there has been a violation of the Act.

The Town is hereby required, pursuant to Section 308(a) of the Act, 33 U.S.C. § 1318(a), to respond to this Request for Information (the "Request") within **45 calendar days of receipt of this letter**. Please read the instructions in Attachment A carefully before preparing your response and answer each item in Attachment B as clearly and completely as possible.

Your response to this Request must also be accompanied by a certificate that it is signed and dated by the person who is authorized to respond to the Request. A Statement of Certification, Attachment C, is attached to this letter.

Information submitted pursuant to this Request shall be sent by certified mail and shall be addressed as follows:

John Melcher (OES 04-1)
United States Environmental Protection Agency
5 Post Office Square - Suite 100
Boston, MA 02109-3912

Compliance with this Request is mandatory. Failure to respond fully and truthfully, or to adequately justify any failure to respond within the time frame specified above, also constitutes a violation of the Clean Water Act subject to enforcement action, including the assessment of penalties. In addition, providing false, fictitious, or fraudulent statements or representations may subject you to criminal prosecution under 18 U.S.C. § 1001.

If you have questions regarding this Request, please contact John Melcher, Enforcement Officer of my staff at (617) 918-1663 or have your attorney contact Kevin Pechulis, Enforcement Counsel at (617) 918-1612.

Sincerely,

James Chow, Manager
Technical Enforcement Office
Office of Environmental Stewardship

Cc (electronic only): John Haines, Department of Public Works, Director

Enclosures:

Attachment A – Instructions
Attachment B – Request
Attachment C – Statement of Certification
Attachment D – Summary of Sampling Inspection – August 19, 2014
Attachment E – EPA New England Bacterial Source Tracking Protocol

Attachment A

Instructions

1. Provide a separate narrative response to each and every item and subpart thereof set forth in this Request. Precede each response with the text and the number of the item and the subpart to which the response corresponds.

2. If you cannot respond to any item in full, respond to the extent possible. If your responses are qualified in any manner, explain.

3. Any documents referenced or relied upon by you to respond to the Request must be copied and submitted to EPA with your response. All documents must contain a notation indicating the item and subpart to which they are responding. If the documentation that supports a response to one item duplicates the documentation that supports another item, submit one copy of the documentation and reference the documentation in subsequent responses.

4. If information or documents not known or not available to you as of the date of the submission of the response to this Request should later become known, or available to you, you must supplement your response. Moreover, should you find at any time after the submission of your response that any portion of the submitted information is inaccurate or incomplete, you must notify the EPA of this finding as soon as possible and provide a corrected response.

Attachment B

Request

Illicit Discharge Detection and Elimination (IDDE)

Part II.B.3 of the Permit provides that the Town must develop, implement, and enforce a program to detect and eliminate illicit discharges. An illicit discharge is any discharge to an MS4 that is not composed entirely of stormwater, or included in the list of exceptions provided in Part I.F of the Permit.

IDDE Ordinance

Part II.B.3(b) of the Permit provides that the Town must, to the extent allowable under state law, effectively prohibit, through an ordinance or other regulatory mechanism, illicit discharges into the MS4 and implement appropriate enforcement procedures and actions.

1. State ("yes" or "no") whether the Town has adopted a regulatory mechanism to prohibit illicit discharges into the MS4.

2. If the Town has adopted a regulatory mechanism to prohibit illicit discharges into the MS4, provide a copy of the regulatory mechanism. If no such mechanism exists, provide a schedule that explains the process and specifies the date(s) by which the Town plans to adopt and enforce such a regulatory mechanism.

IDDE Plan

Part II.B.3(c) of the Permit provides that the Town must develop and implement a program to detect and eliminate illicit discharges.

3. State ("yes" or "no") whether the Town has developed and implemented a program to detect and eliminate illicit discharges.

4. If the Town has implemented a program to detect and eliminate illicit discharges, provide a written copy of the documents that comprise the program. Submission of a written IDDE Plan that includes a protocol for detection and elimination of illicit discharges would constitute a thorough response to this question. If no such written program exists, provide a schedule that explains the process and specifies the date(s) by which the Town plans to create and implement such a program. Attachment E provides a recommended framework for illicit discharge detection that can be conducted at stormwater outfalls, as well as upstream within the MS4.

IDDE Detection and Elimination

5. Explain whether the Town has conducted any IDDE investigations and provide the following information for each IDDE investigation that the Town has conducted since May 1, 2010:

a. The Town MS4 outfall from which the suspected illicit discharge was released or continues to be released;

b. The water body to which the Town MS4 outfall discharged or discharges, the Surface Water Classification for the waterbody, and whether a Total Maximum Daily Load ("TMDL") has been established for the water body;

c. The basis for the Town suspecting the presence of an illicit discharge, and when the Town became aware of this information;

d. The actions the Town has taken to trace the source(s) of the illicit discharge;

e. Whether the Town determined the source(s) of the illicit discharge;

f. Whether the illicit discharge has been eliminated, and if so when;

g. The entity that eliminated the illicit discharge (*i.e.*, the Town or a private entity);

h. How much time elapsed between the identification of the source(s) of the illicit discharge and the elimination of the illicit discharge; and

i. If the illicit discharge has not been eliminated, the Town's plans to eliminate the illicit discharge.

Town MS4 Outfall Beneath West Union Street Discharging to Meadow Brook

On August 19, 2014, EPA performed a sampling inspection of the Town's MS4. Together with Town representatives, EPA visited 16 locations within the MS4 during dry weather. EPA collected samples from the five locations at which flow was observed. Analysis of these samples revealed concentrations of pharmaceuticals and ammonia sufficient to indicate the presence of illicit discharges of wastewater at two locations: an outfall beneath West Union Street into Meadow Brook (the "West Union Street outfall") and a manhole at the intersection of West Union Street and Central Street that, according to the Town's maps, conveys flow to the West Union Street outfall. Attachment D provides a summary of the sampling results from the August 19, 2014, sampling. The West Union Street outfall is designated as "O-194" and the manhole at the intersection of West Union Street and Central Street is designated as "WUMH."

6. Provide all sampling results and other information that the Town has collected to track and confirm the source of the ammonia concentrations found at locations O-194 and WUMH during EPA's August 19, 2014 sampling, as shown in Attachment D. If the Town has not tracked and confirmed the source of the ammonia concentrations found at locations O-194 and WUMH during EPA's August 19, 2014, sampling, provide a schedule that explains the process and specifies the date(s) by which the Town plans to complete investigation of the portion of the Town's MS4 discharging to Meadow Brook from the West Union Street outfall. Based on EPA's sampling data in Attachment D, EPA recommends the use of ammonia test strips (as described in Attachment E) at appropriate

locations in the MS4 to trace the source of the elevated ammonia at O-194 and WUMH.

Construction Site Stormwater Runoff Control

Part II.B.4 of the Permit provides that the Town must develop, implement, and enforce a program to reduce pollutants in any storm water runoff to the MS4 from construction activities that result in a land disturbance of greater than or equal to one acre ("Construction Sites").

Construction Site Ordinance

Part II.B.4(a) of the Permit provides that the Town must, to the extent allowable under state law, adopt an ordinance or other regulatory mechanism to require sediment and erosion control at Construction Sites.

7. State ("yes" or "no") whether the Town has adopted a regulatory mechanism to require sediment and erosion control at Construction Sites.

8. If the Town has adopted a regulatory mechanism to require sediment and erosion control at Construction Sites, provide a copy. If no such regulatory mechanism exists, provide a schedule that explains the process and specifies the date(s) by which the Town plans to adopt and enforce such a regulatory mechanism.

Procedures for Inspections and Enforcement at Construction Sites

Part II.B.4(g) of the Permit provides that the Town must implement procedures for inspections and enforcement of control measures at Construction Sites.

9. State ("yes" or "no") whether the Town has implemented procedures for inspections and enforcement of control measures at Construction Sites.

10. If the Town has implemented procedures for inspections and enforcement of control measures at Construction Sites, provide a written copy of those procedures. A thorough response would include a list of the Construction Sites contributing runoff to the MS4 since May 1, 2010, as well as a list of, and description of, the inspections and enforcement performed by the Town for those construction sites. If no such written procedures exist, provide a schedule that explains the process and specifies the date(s) by which the Town plans to create and implement such procedures.

Post-Construction Stormwater Management in New Development and Redevelopment

Part II.B.5 of the Permit provides that the Town must develop, implement, and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than one acre and discharge into the MS4 ("New Development and Redevelopment").

Post-Construction Ordinance

Part II.B.5(a) of the Permit provides that the Town must, to the extent allowable under state law, adopt an ordinance or other regulatory mechanism to address post-construction runoff from New Development and Redevelopment.

11. State ("yes" or "no") whether the Town has adopted a regulatory mechanism to address post-construction runoff from New Development and Redevelopment.

12. If the Town has adopted a regulatory mechanism to address post-construction runoff from New Development and Redevelopment, provide a copy. If no such regulatory mechanism exists, provide a schedule that explains the process and specifies the date(s) by which the Town plans to adopt and enforce such a regulatory mechanism.

Operation and Maintenance of Stormwater Control Measures

Part II.B.5(b) of the Permit provides that the Town must implement procedures to ensure adequate long-term operation and maintenance of best management practices, referred to in this Request as Stormwater Control Measures.

13. State ("yes" or "no") whether the Town has implemented procedures to ensure adequate long-term operation and maintenance of Stormwater Control Measures.

14. If the Town has implemented procedures to ensure adequate long-term operation and maintenance of Stormwater Control Measures, provide a written copy of these procedures. A thorough response would include a list of the applicable Stormwater Control Measures built since May 1, 2010, and a description of the procedures in place for each. If no such written procedures exist, provide a schedule that explains the process and specifies the date(s) by which the Town plans to create and implement such procedures.

Pollution Prevention and Good Housekeeping in Municipal Operations

Preventing and/or Reducing Pollutant Runoff from Municipal Operations

Part II.B.6(a) of the Permit provides that the Town must develop and implement a program with a goal of preventing and/or reducing pollutant runoff from municipal operations. Part II.B.6(b) of the Permit provides that the Town's program must include maintenance activities for, among other things, fleet maintenance and building maintenance. Part II.B.6(c) of the Permit provides that the Town must develop schedules for municipal maintenance activities described in Part II.B.6(b) of the Permit.

15. State ("yes" or "no") whether the Town has (a) implemented a program with a goal of preventing and/or reducing pollutant runoff from municipal operations, (b) implemented procedures for fleet maintenance and building maintenance activities, and (c) developed schedules for fleet maintenance and building maintenance activities.

16. If the Town has (a) implemented a program with a goal of preventing and/or reducing pollutant runoff from municipal operations, (b) implemented procedures for fleet maintenance and building maintenance activities, and (c) developed schedules for fleet maintenance and building maintenance activities, provide written copies of this program, these procedures, and these schedules. A thorough response would include a description of the Town's maintenance activities performed at the Department of Public Works yard and a schedule for maintenance activities at the Department of Public Works yard. If no such program, procedures, and/or schedules exist, provide a schedule that explains the process and specifies the date(s) by which the Town plans to adopt and implement such a program, such procedures, and such schedules.

Inspections and Maintenance of Stormwater Control Measures

Part II.B.6(d) of the Permit provides that the Town must develop inspection procedures and schedules for Stormwater Control Measures.

17. State ("yes" or "no") whether the Town has developed inspection procedures and schedules for Stormwater Control Measures.

18. If the Town has developed such procedures and schedules, provide a copy. A thorough response would include a list of the Stormwater Control Measures owned or operated by the Town and a list of inspections and maintenance performed since May 1, 2010. If no such procedures and schedules exist, provide a schedule that explains the process and specifies the date(s) by which the Town plans to develop such procedures and schedules.

Attachment C

Statement of Certification

Complete and Include With Your Response

I declare under penalty of perjury that I am authorized to respond on behalf of the Town of East Bridgewater. I certify that the foregoing responses and information submitted were prepared by me, or under my direction or supervision and that I have personal knowledge of all matters set forth in the responses and the accompanying information. I certify that the responses are true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

By_____
(Signature)

_____
(Printed)

_____
(Title)

_____
(Date)

Attachment D

Summary of East Bridgewater MS4 Sampling Inspection – August 19, 2014

Location	Site ID	School	FireDOT	O-194	O-251	WUMH
	Sample Time	8:40	9:00	10:00	11:10	12:15
Coordinates	North	42.02682552	42.0267842	42.03161191	42.036261[1]	42.03289483
	West	-70.9573646	-70.95738852	-70.96651478	-70.958764[1]	-70.95967523
YSI Meter	Temperature, °C	17.1	17.1	18.3	20.8	20
	Conductivity, µS/cm	1,278	1,250	940	1,260	1,690
	Salinity, ppt	0.6	0.6	0.2	0.7	0.8
Field Test Kits (miligrams/liter)	Ammonia	0	0	2	0	6
	Chlorine	0.10	0	0.10	0.02	0.08
	Surfactants	0.10	0.10	0.25	0.3	0.4
Bacteria	E.Coli, MPN/100ml	8[2]	ND (4)	ND (4)	12	30
	Enterococcus, MPN/100ml	86[2,3]	52[3]	10[3]	10[3]	98[3]
Pharmaceutical and Personal Care Products (nanograms/liter)	Atenolol	ND (2.0)	ND (2.0)	110	2.0	38
	Acetaminophen	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
	Cotinine	0.47[4]	0.94	66	6.1	27
	1,7-Dimethylxanthine	ND (2.0)	ND (2.0)	ND (2.0)	2.0	ND (2.0)
	Caffeine	15	9.2	14	14	17
	Metoprolol	ND (2.0)	ND (2.0)	16	ND (2.0)	ND (2.0)
	Carbamazepine	2.1	2.0	22	11	6.8

Notes

1. Locations obtained from GoogleEarth Pro
2. Exceeds holding time
3. Estimate
4. Cotinine was detected in the lab blank at 0.49 ng/L, therefore at this level the compound is associated with lab blank contamination.

ND (x.x): not detected above the laboratory reporting limit denoted in parenthesis.

Conditional Formatting Key

- E. Coli: Red ≥ 10,000 col/100ml, Orange ≥ 1260 col/100ml, Yellow ≥ 236 col/100ml
- Entero: Red ≥ 1000 col/100ml, Orange ≥ 350 Yellow ≥ 54 col/100ml
- NH_3: Red ≥ 6 mg/L, Orange ≥ 0.5 mg/L, Yellow ≥ 0.0 mg/L
- Cl_2: Red ≥ 1.0 mg/L, Orange ≥ 0.3 mg/L, Yellow ≥ 0.02 mg/L
- Surfactants: Red ≥ 1.0 mg/L, Orange ≥ 0.5 mg/L, Yellow ≥ 0.25 mg/L (may give false positive at salinity greater than 1 ppt)
- Pharmaceutical and Personal Care Products: pink = concentrations greater than background

EPA notes while there are currently no numerical standards to compare Pharmaceutical and Personal Care Products ("PPCPs") results against, it is EPA's experience that acetaminophen is the single best bacterial source tracking compound of those listed above, and any detection of this compound may indicate a source of sanitary sewage. When a sanitary sewage source is present, depending on the type of source, distance from the sample location, and the strength of the source, concentrations of PPCPs may range from the low ng/l range up to thousands of ng/l. EPA technical staff can provide a more complete explanation of each particular set of results.

Attachment E

EPA New England Bacterial Source Tracking Protocol

EPA New England Bacterial Source Tracking Protocol

Draft – January 2012

Purpose

This document provides a common framework for EPA New England ("EPA-NE") staff to develop and implement bacterial source tracking sample events, and provides a recommended approach to watershed association, municipal, and State personnel. Adopted from Boston Water and Sewer Commission ("BWSC") (2004), Pitt (2004), and based upon fieldwork conducted and data collected by EPA-NE, the protocol relies primarily on visual observations and the use of field test kits and portable instrumentation during dry and wet weather to complete a screening-level investigation of stormwater outfall discharges or flows within the drainage system. When necessary, the addition of more conclusive chemical markers may be included. The protocol is applicable to most typical Municipal Separate Storm Sewer Systems ("MS4s") and smaller tributary streams. The smaller the upstream catchment area and/or more concentrated the flow, the greater the likelihood of identifying an upstream wastewater source.

Introduction

The protocol is structured into several phases of work that progress through investigation planning and design, laboratory coordination, sample collection, and data evaluation. The protocol involves the concurrent collection and analyses of water samples for surfactants, ammonia, total chlorine, and bacteria. When more precise confirmation regarding the presence or absence of human sanitary sewage is necessary, and laboratory capacity is available, the additional concurrent collection of samples for select Pharmaceutical and Personal Care Product ("PPCP") analysis is advised. When presented with a medium to large watershed or numerous stormwater outfalls, the recommended protocol is the screening of all outfalls using the surfactant, ammonia, total chlorine, and bacterial analyses, in addition to a thorough visual assessment. The resulting data and information should then be used to prioritize and sample a subset of outfalls for all parameters, including PPCP compounds and additional analyses as appropriate. Ideally, screening-level analyses can be conducted by state, municipal, or local watershed association personnel, and a prioritized sub-set of outfalls can be sampled through a commercial laboratory or by EPA-NE using more advanced confirmatory techniques.

Step I – Reconnaissance and Investigation Design

Each sample event should be designed to answer a specific problem statement and work to identify the source of contamination. Any relevant data or reports from State, municipal, or local watershed associations should be reviewed when selecting sample locations. Aerial photography, mapping services, or satellite imagery resources are available free to the public through the internet, and offer an ideal way to pre-select locations for either field verification or sampling.

Sample locations should be selected to segregate outfall sub-catchment areas or surface waters into meaningful sections. A common investigative approach would be the identification of a

specific reach of a surface water body that is known to be impaired for bacteria. Within this specific reach, stormwater outfalls and smaller tributary streams would be identified by desktop reconnaissance, municipal outfall mapping, and field investigation when necessary. Priority outfalls or areas to field verify the presence of outfalls should be selected based on a number of factors, including but not limited to the following: those areas with direct discharges to critical or impaired waters (e.g. water supplies, swimming beaches); areas served by common/twin-invert manholes or underdrains; areas with inadequate levels of sanitary sewer service, Sanitary Sewer Overflows ("SSOs") or the subject of numerous/chronic sanitary sewer customer complaints; formerly combined sewer areas that have been separated; culverted streams, and; outfalls in densely populated areas with older infrastructure. Pitt (2004) provides additional detailed guidance.

When investigating an area for the first time, the examination of outfalls in dry-weather is recommended to identify those with dry-weather flow, odor, and the presence of white or gray filamentous bacterial growth that is common (but not exclusively present) in outfalls contaminated with sanitary. For those outfalls with dry-weather flow and no obvious signs of contamination, one should never assume the discharge is uncontaminated. Sampling by EPA-NE staff has identified a number of outfalls with clear, odorless discharges that upon sampling and analyses were quite contaminated. Local physical and chemical conditions, in addition to the numerous causes of illicit discharges, create outfall discharges that can be quite variable in appearance. Outfalls with no dry-weather flow should be documented, and examined for staining or the presence of any obvious signs of past wastewater discharges downstream of the outfall.

As discussed in BWSC (2004), the protocol may be used to sample discreet portions of an MS4 sub-catchment area by collecting samples from selected junction manholes within the stormwater system. This protocol expands on the BWSC process and recommends the concurrent collection of bacteria, surfactant, ammonia, and chlorine samples at each location to better identify and prioritize contributing sources of illicit discharges, and the collection of PPCP compounds when more conclusive source identification is necessary.

Finally, as discussed further in Step IV, application of this sampling protocol in wet-weather is recommended for most outfalls, as wet-weather sampling data may indicate a number of illicit discharge situations that may not be identified in dry weather.

Step II – Laboratory Coordination

All sampling should be conducted in accordance with a Quality Assurance Project Plan ("QAPP"). A model QAPP is included as Attachment 1. While the QAPP details sample collection, preservation, and quality control requirements, detailed coordination with the appropriate laboratory staff will be necessary. Often sample events will need to be scheduled well in advance. In addition, the sampling team must be aware of the strict holding time requirements for bacterial samples – typically samples analysis must begin within 6 hours of sample collection. For sample analyses conducted by a commercial laboratory, appropriate coordination must occur to determine each facilities respective procedures and requirements.

The recommendations in this protocol are based on the use of a currently unpublished EPA-NE modification to *EPA Method 1694 – Pharmaceuticals and Personal Care Products in Water, Soil, Sediment, and Biosolids by HPLC/MS/MS*. Several commercial laboratories may offer Method 1694 capability. EPA-NE recommends those entities wishing to utilize a contract laboratory for PPCP analyses ensure that the laboratory will provide quantitative analyses for acetaminophen, caffeine, cotinine, carbamazepine, and 1,7-dimethylexanthine, at Reporting Limits similar to those used by EPA-NE (See Attachment 2). Currently, the EPA-NE laboratory has limited capacity for PPCP sampling, and any proposed EPA-NE PPCP sample events must be coordinated well in advance with the appropriate staff.

Step III – Sample Collection

Once a targeted set of outfalls has been selected, concurrent sampling and analyses for surfactants, ammonia, and total chlorine (which can all be done through the use of field kits), in addition to bacteria (via laboratory analysis) should be conducted. When numerous outfalls with dry-weather flow exist, sample locations should be prioritized according to the criteria mentioned above. In addition, field screening using only the field kits may occur during the field reconnaissance. However, it must be emphasized that the concurrent sampling and analyses of bacteria, surfactant, ammonia, and total chlorine parameters is the most efficient and cost-effective screening method.

When first observed, the physical attributes of each outfall or sampling location should be noted for construction materials, size, flow volume, odor, and all other characteristics listed on the data collection form (Attachment 3). In addition, GPS coordinates should be collected and a photograph of the sample location taken. Whenever possible, the sampling of storm drain outfalls should be conducted as close to the outfall opening as possible. Bacterial samples should be collected first, with care to not disturb sediment materials or collect surface debris/scum as best possible. A separate bottle is used to collect a single water sample from which aliquots will be analyzed for surfactants, ammonia, and total chlorine. A sample for PPCP analysis is recommended to be collected last, as the larger volume required and larger bottle size may cause some sediment disturbance in smaller outfalls or streams. If necessary, a second smaller, sterile and pre-cleaned sampling bottle may be used to collect the surface water which can then be poured into the larger PPCP bottle. Last, a properly calibrated temperature/specific conductance/salinity meter should be used to record all three parameters directly from the stream or outfall. When flow volume or depth is insufficient to immerse the meter probe, a clean sample bottle may be utilized to collect a sufficient volume of water to immerse the probe. In such instances, meter readings should be taken immediately.

As soon as reasonably possible, sample aliquots from the field kit bottle should be analyzed. When concurrent analyses are not possible, ammonia and chlorine samples should be processed first, followed by surfactant analysis, according to each respective Standard Operating Procedure as appropriate based on the particular brand and type of field test kit being used. All waste from the field test kits should be retained and disposed of according to manufacture instructions. Where waste disposal issues would otherwise limit the use of field kits, EPA-NE recommends

that, at a minimum, ammonia test strips with a Reporting Limit below 0.5 mg/L be utilized. Such test strips typically are inexpensive and have no liquid reagents associated with their use. Results should be recorded, samples placed in a cooler on ice, and staff should proceed to the next sample location.

Upon completion of sampling and return to the laboratory, all samples will be turned over to the appropriate sample custodian(s) and accompanied by an appropriate Chain-of-Custody ("COC") form.

Step IV – Data Evaluation

Bacterial results should be compared to the applicable water quality standards. Surfactant and ammonia concentrations should be compared to the thresholds listed in Table 1. Evaluation of the data should include a review for potential positive results due to sources other than human wastewater, and for false negative results due to chemical action or interferences. In the EPA-NE region, field sampling has indicated that the biological breakdown of organic material in historically filled tidal wetlands may cause elevated ammonia readings, as can the discharge from many landfills. In addition, salinity levels greater than 1 part per thousand may cause elevated surfactant readings, the presence of oil may likewise indicate elevated levels, and fine suspended particulate matter may cause inconclusive surfactant readings (for example, the indicator ampule may turn green instead of a shade of blue). Finally, elevated chlorine from leaking drinking water infrastructure or contained in the illicit wastewater discharge may inhibit bacterial growth and cause very low bacterial concentrations. Any detection of total chlorine above the instrument Reporting Limit should be noted.

Table 1 – Freshwater Water Quality Criteria, Threshold Levels, and Example Instrumentation [1]

Analyte/ Indicator	Threshold Levels/ Single Sample[3]	Instrumentation
E. coli [2]	235 cfu/100ml	Laboratory via approved method
Enterococci [2]	61 cfu/100ml	Laboratory via approved method
Surfactants (as MBAS)	≥ 0.25 mg/l	MBAS Test Kit (e.g. CHEMetrics K-9400)
Ammonia (NH_3)	≥ 0 .5 mg/l	Ammonia Test Strips (e.g. Hach brand)
Chlorine	> Reporting Limit	Field Meter (e.g. Hach Pocket Colorimeter II)
Temperature	See Respective State Regulations	Temperature/Conductivity/Salinity Meter (e.g. YSI Model 30)

[1] The mention of trade names or commercial products does not constitute endorsement or recommendation for use by the U.S. EPA

[2] 314 CMR 4.00 MA - Surface Water Quality Standards - Class B Waters.

[3] Levels that may be indicative of potential wastewater or washwater contamination

Attachment 1

Stormwater Monitoring Quality Assurance Project Plan
2012-2017

RFA #

Sampling Plan Acceptance

EPA OES Enforcement and Project Manager/Coordinator **Signature:**	**Date:**
EPA OEME Project Managers/Coordinator **Signature:**	**Date:**
EPA OEME QA Officer **Signature:**	**Date:**
EPA Chemistry Team Lead **Signature:**	**Date:**

1.0 Background

U.S. EPA Administrative Order 5360.1 requires that "all projects involving environmental monitoring performed by or for the U.S. EPA shall not be undertaken without an adequate Quality Assurance Project Plan (QAPP)." The purpose of this document is to describe the process used to develop, select, manage, and finalize stormwater monitoring projects. In describing this process, quality assurance goals and methods will be established, thus ensuring that the overall program and each monitoring project will meet or exceed EPA requirements for quality assurance.

The objective of these projects will be to collect data that is usable by EPA OES enforcement staff for enforcement actions and information requests. The primary focus of this project will be on urban water stormwater outfalls in the New England Region watersheds.

2.0 Sampling overview

Monitoring will be conducted on pre-scheduled days with the Laboratory. Samples will be retrieved from surface water, in stream or outfalls at suspected hotspots or areas that need further delineation. Sample sites will be located using GPS, with an accuracy goal of $\pm$ 1 meter and PDOP less than 6. Less accurate GPS reading or coordinates from maps will be accepted when site or other conditions do not allow $\pm$ 1 meter accuracy.

The primary focus of this sampling will be used to identify illegal discharges.
Results from the sampling will be used by EPA enforcement staff for enforcement purposes. For this project, sampling will be conducted according to EPA's Ambient Water Sampling SOP (Table 3). Volunteers and watershed association staff may assist in sampling. All procedures will be followed that are specified in Table 3. Parameter to be sampled will be predetermined by enforcement (OES) and OEME staff, based on data needs.

A. Locations

Site locations will be determined from field or desktop reconnaissance by project staff. Sample analyses will be predetermined based on conditions known about the sampling location prior to sampling. These may include data from previous sampling or from data collected from Mass DEP or local watershed associations. Any of the parameters listed in table 2 may be analyzed.

B. Analytical Methods and Reporting limits

Sample analyses will be conducted by EPA Laboratories.

This effort will test and compare the most appropriate analytical methods including, but not limited to; laboratory analysis, test kits and field analysis to determine the most effective and cost-efficient outfall and in-stream sampling approach.
Multiple and repeated testing will occur at each location to compare different method for identifying sewage contamination.

PPCPs, E.coli and enterococcus will be analyzed by EPA's Laboratory. Surfactants, ammonia, total chlorine will be analyzed with field test kits. Potential additional laboratory analyses include nitrogen (nitrate/nitrite), TSS, BOD, surfactants, ammonia and TPH. The Laboratory used

for each sampling event will be determined prior to sampling by the OEME Project Manager based on required analyses Laboratory availability and contract funds available.

Where available, a known concentration sample will be used to evaluate the performance of each test method. The known concentration sample will be processed in the field and Laboratory as a routine sample. The analyst or field technician will not know the concentration of the sample prior to analyzing and reporting the sample result. Sampling for PPCP testing will be done using extreme care not to contaminate the sample. No caffeine products should be consumed prior to sampling.

Table 1: Parameter specifications

Parameter (lab - equipment)	Preservation	Holding time
PH	None	Immediate
Temperature	None	Immediate
Sp Cond	None	Immediate
DO	None	Immediate
Total Phosphorus (EPA)	H_2SO_4 (pH <2) + Ice	28 days
TSS (EPA)	Ice	7 days
TSS (Alpha)	Ice	7 days
BOD (Alpha)	Ice	48 hours
Surfactants (Alpha)	Ice	48 hours
Surfactants (field kit – Chemetrics)	None	Immediate
Ammonia (alpha)	H_2SO_4 (pH <2) + Ice	28 days
Ammonia (test strips)	None	Immediate
TPH Petroleum ID (alpha)	Ice	7 Days to extraction 40 days after extraction
E. Coli (EPA)	Ice	6 hrs to lab
Enterococcus (EPA)	Ice	6 hrs to lab
PPCP	Ice (acidified in Lab)	7 day to extraction 40 days after extraction
Chlorine (Field kit – Hach)	None	Immediate

Table 2: Analytical References and Quality Control Goals

		Water Quality Criteria or Guidelines	Quality Assurance Goals		
Parameter (lab- equipment)	Reporting Limits	(MA or EPA)	Precision	Accuracy	Completeness
PH	4 to 10 units	6.5 - 8.3	0.02 unit	± 0.3 units	90%
Temperature	0 to +40°C	28.3°C	0.1 °C	± 0.15°C	90%
Sp Cond	0 to 100 mS/cm	NA	5 uS/cm	±10% cal std (µS/cm)	90%
DO	0.5mg/l to Sat	≥5 mg/l , ≥60% saturation	0.02mg/l	± .5 mg/l	90%
Total Phosphorus (EPA)	5.0 ug/l	NA	Field dup 30% RPD	MS 70-130%	90%
TSS (EPA)	5mg/L	NA	Field dup 30% RPD	See SOP	
TSS (Alpha)	5 mg/L	NA	Field dup 30% RPD	See SOP	90%
BOD (Alpha)	2 mg/L	NA	Field dup 30% RPD	See SOP	90%
Surfactants (field kit – Chemetrics)	0.25 mg/L[1]	0.25 mg/L	Field dup 30% RPD	TBD	90%
Ammonia (test strips)	0.25 mg/L[1]	1.0 mg/L	Field dup 30% RPD	TBD	90%
TPH Petroleum ID (alpha)	Variable	NA	Field dup 30% RPD	See SOP	
E. Coli (EPA)	4 col./ 100 ml	<=126 col./100 ml* <= 235 col./100 ml	±100 col/100ml or 30% RPD	N/A	90%
Enterococcus (EPA)	1 col/100ml	<=33 col./100 ml* <= 61 col./100 ml	±100 col/100ml or 30% RPD	See SOP	90%
PPCP	TBD	NA	Field dup 50% RPD	TBD	90%
Chlorine (Field kit – Hach)	0.02 mg/l	NA	Field dup 30% RPD	TBD	90%

Note
*Geometric mean Criteria
TBD = To be determined, Field methods and some colorimeter methods do not have accuracy criteria determined.
[1] Needs field verification to confirm

Table 3: Field and Laboratory References

Parameter	Analytical Method Reference	SOP reference
	Field References- 5/2005	
pH		
Conductivity		
Temperature		
dissolved oxygen	n/a	ECASOP-YSISondes9
Ambient water samples	n/a	ECASop-Ambient Water Sampling2
Chain of custody of samples	n/a	EIASOP-CHAINOFCUST
Sample login, tracking, disposition	n/a	EIASOP-ADMLOG14
	Lab. References- 5/ 2005	
Total Phosphorus (EPA)	EPA 365.3	EIASOP-INGTP8
TSS (EPA)	EPA 160.2	EIASOP-INGTSS-TDS-VRES5
TSS (Alpha)	EPA 160.2,SM2540D	SOP/07-29
BOD (Alpha)	EPA 405.1,SM5210B	SOP/07-13
Surfactants (field kit – Chemetrics)	Chemetrics	Draft
Ammonia (test strips)	Hach	Draft
TPH Petroleum ID (alpha)	8015B (M)	0-017
E. Coli (EPA)	SM9230	ECASOP- TC/EC Colilert2
Enterococcus (EPA)	SM9230	ECASOP-Enterolert1
PPCP	EPA 1694	TBD
Chlorine (Field kit – Hach)	Hach	TBD

*Specific conductance is the only parameter identified as non critical

Bottle list

Table 4: Bottle Sampling List

Parameter (lab - equipment)	Bottle	Preservation
Primary analyses		
E. Coli (EPA)	(2) 120ml or 250ml sterile	Ice
Enterococcus (EPA)		Ice
PPCP	1 Liter Amber	Ice (acidified in Lab)
Optional analyses		
Chlorine (Alpha)	500 ml	Ice
Total Phosphorus (EPA)	125 ml	H_2SO_4 (pH <2) + Ice
TSS (EPA)	1 liter	Ice
TSS (Alpha)	1 liter	Ice
BOD (Alpha)	1 Liter	Ice
TPH Petroleum ID (alpha)	2 -1 Liter Amber Glass tephlon lined	Ice
E. Coli (Alpha)	120 ml sterile	Ice
Enterococcus (Alpha)	120 ml sterile	Ice

C. Quality Control

Calibration:	EPA will calibrate its sondes according to the EPA sonde calibration SOP.
Field duplicate:	One duplicate sample will be collected per sampling event or approximately for every ten samples.
Trip Blank:	OEME Chemist will run appropriate QA samples for PPCP's. One blank sample will be collected for approximately every ten bacteria samples. Reported data that is less than 5 times the trip (field) blank concentration will be flagged.
QC Criteria:	Are specified in table 2, data not meeting this criteria will be reviewed by the Project Manager. Data that does not meet laboratory QA/QC criteria will be flagged by the laboratory.

D. Chain of Custody

Chain of custody procedures will follow the OEME/Investigations Office SOP (Table 3)

3.0 Data Review

EPA Microbiology data will be reviewed by the Biology QAO. Alpha generated microbiology samples will be reviewed by the OEME Project Manager. All field data and draft data reports will be reviewed by the OEME Project manager. Laboratory generated data (from Alpha and EPA) will be reviewed by the Chemistry Team Leader.

4.0 Data reports

Data reports will be reviewed by the Project Coordinator and the OEME Project Manager before a final report is release to the Enforcement Coordinator. Draft reports may be released without a complete review.

5.0 Attachments

1) Standard Operating Procedure Enterococcus (SM9230B), Multiple Tube Technique. SOP/07-01 *Alpha Analytical, Inc. May 28, 2005*

2) Standard Operating Procedure E. Coli (SM9213D). SOP/07-41 *Alpha Analytical, Inc. May 28, 2005*

3) Standard Operating Procedure MBAS, Ionic Surfactants. Draft SOP *EPA Laboratory. January 28, 2010*

4) Standard Operating Procedure Nitrogen Ammonia. Draft SOP *EPA Laboratory. February 10, 2011*

5) Standard Operating Procedure Total Chlorine. Draft SOP *EPA Laboratory. February 12, 2010*

6) Standard Operating Procedure TSS/ TVSS (SM2540 D, EPA 160.2). SOP/07-29 *Alpha Analytical, Inc. September 29, 2007*

7) Standard Operating Procedure BOD-5day, SBOD-5day, and cBOD-5day (SM 5210B, and EPA 405.1). SOP/07-13 *Alpha Analytical, Inc. September 29, 2007*

8) Standard Operating Procedure TPH 8015D – Modified 0-017 (EPA 8015D Modified) *Alpha Analytical, Inc. March 04, 2008*

9) Standard Operating Procedure determination of Trace Elements in Water and Wastes by Inductively Coupled Plasma- Mass Spectrometry (200.8). SOP/06-11 Alpha Analytical, Inc. July 13, 200

10) Standard Operating Procedure Inductively Coupled Plasma – Mass Spectrometry (6020). SOP/06-10 Alpha Analytical, Inc. October 25, 2007

EPA United States Environmental Protection Agency

Target Compounds, Uses, and Reporting Limits

Target Compound	Major Use	RL (ng/L)	Daily Dose (ng)
Caffeine	Natural Stimulant	5.0	200,000,000
1,7-DMX	Metabolite of caffeine	2.5	N/A
Acetaminophen	Pain Reliever	2.5	650,000,000
Carbamazepine	Anti- depressant / bi-polar Anti-convulsant (epilepsy)	0.5	100,000,000
Primidone	Anti- epilepsy drug (AED)	5.0	100,000,000
Atenolol	Beta Blocker High Blood Pressure	2.5	50,000,000
Cotinine	Metabolite of Nicotine	0.5	3,500-7,200 (ng/mL)
Urobilin	By-product of hemoglobin breakdown (mammals)	5.0	1,300,000 ng/g in feces
Azithromycin	Antibiotic	1.6	200,000,000

Attachment 3

STORMWATER MONITORING (PAGE 2)

Field Equipment List

Waste Containers (2 total – clearly labeled):

1 liter amber plastic for surfactants/detergents kit waste
1 liter amber plastic for Cl2 kit waste

Sample Bottles (3 total for each sample location)-
120ml sterile – E.coli/entero
1 Liter amber glass: PPCP, *EPA* (Peter Philbrook)
120ml-250ml plastic – Field Kit Bottle – to be used on site for kits listed above

***Fill out chain of custody

In Carboy Container
☐Log book
☐COC forms
☐Extra sample bottles
☐Colored tape
☐Sharpies
☐Write-On-Rain Pens
☐Paper towels
☐GPS
☐Sampling plan & GPS locations
☐Regular length Powder Free Gloves
☐Squirt bottle of DI Water
☐Coolers with Ice
☐Waders/Boots
☐YSI multi parameter Meter

Attachment 3

STORMWATER MONITORING

Field Collection Requirements (To be recorded at each site)

Sample-
Site Name _____

Time collected_____

Date collected_____

Inspection-
****Take picture at site****
Outfall diameter_____('na' if open stream)

Flow estimate_____('na' if open stream)

Odor_____

Color_____

Turbidity_____

Floatables_____

Other observations_____

_____

YSI Meter (calibrate in lab)-
Salinity_____

Temp_____

Conductivity (give both #'s)

_____

Location information-
Short description of where sample was collected at site_____

_____

_____

GPS_____

_____

Field Kits listed in the order they should be conducted in, include any applicable notes-

NH3 strip_____

Cl2 kit_____
Hach meter – (3 min wait)

Surfactant_____
Chemetrics K-9400 Blue box/detergent test kit

Additional Notes:

(Note any changes in weather conditions)_____

_____

_____

_____

_____